AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for controlling the heating of an oxygen sensor mounted in an engine of motor vehicle comprising the steps of:

detecting starting of the engine;

measuring capacitance between two elements of an oxygen sensor to determine the presence of a liquid; and

applying power to a heater of the oxygen sensor in response to the measured capacitance.

2. (Original) The method of claim 1 wherein the step of measuring capacitance comprises the step of measuring the capacitance between an electrode of the oxygen sensor and a shell of the oxygen sensor.

3. (Original) The method of claim 1 wherein the step of applying power comprises the step of applying a first level of power to the heater if the capacitance is greater than a first predetermined capacitance value and the rate of change of measured capacitance is greater than a first predetermined rate.

4. (Original) The method of claim 3 wherein the step of applying power further comprises the step of applying a second level of power greater than the first level of power to the heater if the capacitance is not greater than the first predetermined capacitance value or the rate of change of measured capacitance is not greater than the first predetermined rate.

5. (Original) The method of claim 3 wherein the step of applying power further comprises the step of applying a second level of power greater than the first level of power to the heater if the capacitance is less than a second predetermined capacitance value greater than the first predetermined capacitance value and the rate of change of measured capacitance is less than a second predetermined rate, the second predetermined rate less than the first predetermined rate.

6. (Previously Presented) The method of claim 1 further comprising the steps of:

measuring elapsed time after the step of detecting starting of the engine; and

applying power to the heater at a first power level in response to the measured elapsed time being less than a first predetermine value.

7. (Original) The method of claim 6 further comprising the step of increasing the power applied to the heater to a second power level greater than the first power level in response to the measured elapsed time being greater than a second predetermined time, the second predetermined time being greater than the first predetermined time.

8. (Currently Amended) A method for controlling the heating of an oxygen sensor mounted in an engine of motor vehicle comprising the steps of:

detecting starting of the engine;

measuring capacitance between two elements of an oxygen sensor;

applying power to a heater of the oxygen sensor in response to the measured capacitance;

providing a heater rod operatively coupled to the oxygen sensor;

providing a case coupled to the oxygen sensor for insertion in a motor vehicle;

measuring the capacitance between the outer electrode and the case of a test sensor mounted in a motor vehicle as a function of operating conditions of the motor vehicle;

determining heater rod temperature settings in response to the capacitance measured; and

programming a control unit of a motor vehicle in which an oxygen sensor is to be installed to supply heater power to the heater rod of the oxygen sensor to achieve the determined heater rod temperature settings.

9. (Original) The method of claim 8 wherein the step of determining heater rod temperature settings comprises the step of selecting a first heater rod temperature setting

for a first temperature in response to measuring a capacitance greater than a first predetermined capacitance and a rate of change of capacitance greater than a first predetermined rate.

10. (Original) The method of claim 9 wherein the step of determining further comprises the step of selecting a second heater rod temperature setting for a second temperature greater than the first temperature in response to not measuring both a capacitance that is greater than the first predetermined capacitance and a rate of change of capacitance greater than the first predetermined rate.

11. (Original) The method of claim 9 wherein the step of determining further comprises the step of selecting a second heater rod temperature setting for a second temperature greater than the first temperature in response to measuring a capacitance less than a second predetermined capacitance or a rate of change of capacitance less than a second rate.

12. (Original) The method of claim 8 wherein the step of programming the control unit further comprises the step of programming the control unit to supply a first power level to the heater rod to achieve a first heater rod temperature for a first predetermined motor vehicle operating time.

13. (Original) The method of claim 12 wherein the step of programming the control unit further comprises the step of programming the control unit to supply a second power level to the heater rod to achieve a second heater rod temperature greater than the first heater rod temperature in response to the motor vehicle operating time exceeding a second predetermined time.

14. (Currently Amended) A method for measuring oxygen levels in exhaust gases of a motor vehicle:

providing an oxygen sensor;

providing a heater rod coupled to the oxygen sensor;

providing an outer electrode surrounding the heater rod;

providing a shell surrounding the outer electrode and configured for mounting the oxygen sensor in the motor vehicle;

providing a first electrode coupled to the outer electrode and a second electrode coupled to the shell, the first and second electrodes configured to facilitate measurement of capacitance between the outer electrode and the shell to determine a presence of a liquid during operation of the motor vehicle.

15-16. (Cancelled)

17. (Currently Amended) A method for controlling the heating of an oxygen sensor comprising an electrode mounted in an engine of motor vehicle comprising the steps of:

detecting starting of the engine;

measuring capacitance between two elements of an oxygen sensor;

applying power to a heater of the oxygen sensor in response to the measured capacitance;

providing a heater rod coupled to the oxygen sensor;

providing a shell coupled to the heater rod;

measuring a vehicle temperature;

setting a power level of heater power delivered to the heater rod at a first level in response to the measured vehicle temperature being below a predetermined temperature;

measuring capacitance and rate of change of capacitance between the electrode and the shell;

maintaining the power level at the first level in response to the measured capacitance being greater than a first predetermined capacitance level and the rate of change of measured capacitance being greater than a first predetermined rate of change; and

increasing the power level of heater power delivered to the heater rod to a second level greater than the first level in response to the measured capacitance being less than a second predetermined capacitance level and the rate of change of measured capacitance being less than a second predetermined rate of change.

18. (Original) The method of claim 17 further comprising the step of measuring the time elapsed following a vehicle start and maintaining the power level at the first level in response to the measured elapsed time being less than a first predetermined time.

19. (Original) The method of claim 18 further comprising the step of increasing the power level of heater power delivered to the heater rod to the second level in response to the measured elapsed time being greater than a second predetermined time regardless of the measured capacitance or rate of change of capacitance.

20. (Currently Amended) A method for controlling the heating of an oxygen sensor mounted in an engine of a motor vehicle, the oxygen sensor comprising an oxygen sensing element, a heater, and a surrounding shell, the method comprising the steps of:

measuring capacitance between the oxygen sensing element and the surrounding shell to determine a presence of a liquid; and

applying power to the heater in response to the measured capacitance.